

Appl. No.: 10/763,522
Amdt. dated 02/21/2006
Reply to Office action of 11/22/05

REMARKS/ARGUMENTS

Applicants appreciate the telephonic interview conducted on January 17, 2005 in order to clarify the claimed invention and discuss the cited references. In the final Official Action, the Examiner rejects Claims 1-6 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,789,337 to Sheppard in view of U.S. Patent No. 5,367,760 to Terlop et al. The Examiner also rejects Claims 7-9 under 35 U.S.C. § 103(a) as being unpatentable over Sheppard in view of Terlop and further in view of U.S. Patent No. 5,430,426 to Griebel.

As discussed in the telephonic interview, Applicants present amendments and arguments herein which distinguish the cited references and do not raise new issues, as will be explained in further detail below. Therefore, in light of the amendments and subsequent remarks, Applicants respectfully request reconsideration and allowance of the claims.

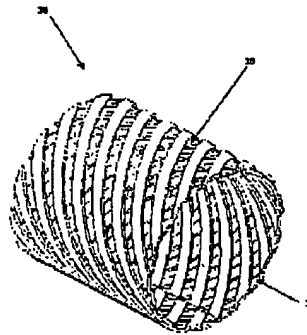
Independent Claim 1 recites that the electromagnet includes at least one spacer disposed circumferentially about the core and between at least a pair of windings. Claim 1 has been amended to recite that the spacer cooperates with at least one of the pair of windings to define a plurality of channels therebetween, and the channels are configured to distribute a coolant medium at least circumferentially about at least one of the pair of windings.

Applicants submit that amended independent Claim 1 is distinguishable from each of the Sheppard and Terlop patents, taken individually or in combination (Applicants refer to the Amendment filed September 13, 2005 for a discussion of Sheppard and Terlop). The Examiner acknowledges that Sheppard does not disclose that the spacing members are disposed circumferentially about the core and do not include channels defined therein. However, the Examiner relies on Terlop as disclosing this particular recitation of independent Claim 1.

Applicants respectfully submit that neither Sheppard nor Terlop discloses a spacer cooperating with at least one of the pair of windings to define a plurality of channels therebetween, wherein the channels are configured to distribute a coolant medium at least circumferentially about at least one of the pair of windings, as recited by Claim 1. As shown in Figure 3 of the present application, grooves (36, 38) are defined in the spacer (30). The channels are defined between the spacer and winding such that coolant may flow within the grooves. In addition, the channels facilitate circumferential flow of the coolant about the winding, while the

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mesh pattern of the spacer ensures that the coolant can contact portions of the winding as the coolant is circulated.



In contrast, Sheppard discloses spacing members (89) positioned between a high voltage winding (86) and a low voltage winding (82), where the spacing members are spaced apart from one another to define coolant convection channels. The spacer members include a bracing member (94) and a filler member (96), where the filler material may expand in response to the application of heat to exert a force to hold the structures together. As noted by the Official Action, Sheppard does not disclose a spacer disposed circumferentially about the core and defining a channel therein. In contrast to the assertions of the Official Action and as will be explained in further detail below, Terlop does not disclose spacers for distributing a coolant medium at all and, therefore, also does not disclose the spacer recited in independent Claim 1.

Applicants submit that Terlop does not disclose a spacer cooperating with at least one of the pair of windings to define a plurality of channels therebetween, wherein the channels are configured to distribute a coolant medium at least circumferentially about at least one of the pair of windings, as recited by independent Claim 1. In contrast to the claimed invention, Terlop discloses a method of making a narrow profile transformer, where Figures 14-25 of Terlop illustrate specific steps of the method. In particular, Figures 14-17 illustrate that spacers (131, 132), such as a rubber material, are positioned between a primary winding material (140) and a secondary winding material (160). The turns of the primary and secondary windings are then formed by spirally winding the materials into a general "G-shape." Furthermore, Figure 18 demonstrates that the spacers are then removed, while the primary and secondary windings remain in a general G-shaped configuration. See column 9, lines 31-34. Figures 19 and 21

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illustrate that the primary and secondary windings are separated from one another and respective ends are coupled to input and output bus bars, as shown in Figures 20 and 22. Moreover, Figure 23 of Terlop shows that the primary and secondary windings are then interleaved together and then coupled to a transformer core (Figure 24). Notably, insulation means (100) is shown positioned between the primary and secondary windings at this stage of the method. Terlop discloses that:

Insulation means 100 is interposed between the primary winding means 40 and the secondary winding means 60 for providing electrical insulation therebetween. Preferably, the insulation means 100 comprises a polymeric coating such as vinyl or similar type coating affixed to the primary winding means 40 and/or the secondary winding means 60 by a fluidized bed coating process, electrostatic coating process or the like. Col. 8, lines 25-32.

Figure 25 shows the encapsulation of the primary and secondary windings with a polymeric material (120). Additionally, Figures 26 and 27 show the primary and secondary windings, respectively, having cooling tubes that extend through each of the turns.

Therefore, Applicants submit that there is a distinct difference between the method disclosed by Terlop and the claimed invention. Namely, although Terlop discloses insulation between the primary and secondary windings, the insulation does not define channels for distributing a coolant medium therethrough and, in fact, would block or prevent any attempted passage of coolant therethrough. Rather, the primary and secondary windings of Terlop define internal tubular fluid passages themselves that extend within respective primary and secondary windings (see Figures 26 and 27 of Terlop). Moreover, Terlop also discloses utilizing longitudinal spacers between the primary and secondary windings (See Figure 17), but the spacers are only used to initially form the primary and secondary windings, as the spacers are subsequently removed and replaced with the insulation means and serve no cooling function. In a distinctively different approach than the claimed invention, it is the primary and second windings themselves that include internal channels for facilitating fluid flow therethrough rather than the spacers. As such, Terlop does not disclose a spacer cooperating with at least one of the pair of windings to define a plurality of channels therebetween, wherein the channels are configured to distribute a coolant medium at least circumferentially about at least one of the pair of windings, as recited by independent Claim 1. Moreover, there would be no need to circulate

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the coolant through a spacer, the insulation, or otherwise, since the circulation of a coolant through the windings themselves already provides the cooling function.

As neither reference discloses at least one spacer cooperating with at least one of the pair of windings to define a plurality of channels therebetween, wherein the channels are configured to distribute a coolant medium at least circumferentially about at least one of the pair of windings, the combination of the references also fails to teach or suggest independent Claim 1 of the present application. Therefore, the rejection of independent Claim 1 under 35 U.S.C. § 103(a) over the cited references is overcome. As such, it is submitted that dependent Claims 2-9 are allowable for at least those reasons discussed above with respect to independent Claim 1.

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CONCLUSION

In view of the amendments and remarks presented above, which do not raise new issues, Applicants submit that the present application is in condition for allowance. As such, the issuance of a Notice of Allowance is therefore respectfully requested. In order to expedite the examination of the present application, the Examiner is encouraged to contact Applicants' undersigned attorney in order to resolve any remaining issues.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

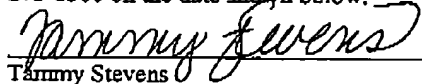


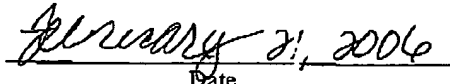
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